

## Working Paper Series

Appalachian Collaborative Center for Learning, Assessment, and Instruction in Mathematics  
Working Paper No. 41

# A Companion to the Film, *Putting Mathematics Education in its Place*

Michael Corbett

Acadia University, Nova Scotia

July 2011

ACCLAIM's mission is the cultivation of *indigenous leadership capacity* for the improvement of school mathematics in rural places. The project aims to (1) understand the rural context as it pertains to learning and teaching mathematics; (2) articulate in scholarly works, including empirical research, the meaning and utility of that learning and teaching among, for, and by rural people; and (3) improve the professional development of mathematics teachers and leaders in and for rural communities..



Copyright © 2011 by the Appalachian Collaborative Center for Learning, Assessment, and Instruction in Mathematics (ACCLAIM). All rights reserved. The Working Paper Series is published at Ohio University, Athens, Ohio by the ACCLAIM Research Initiative.



ACCLAIM Research Initiative  
Address: 314F McCracken Hall  
Ohio University  
Athens, OH 45701-2979

Office: 740-593-9869  
Fax: 740-593-0477

E-mail: [howleyc@ohio.edu](mailto:howleyc@ohio.edu)  
Web: <http://www.acclaim-math.org/researchPublications.aspx>

All rights reserved.

Funded by the National Science Foundation as a Center for Learning and Teaching, ACCLAIM is a partnership of the University of Tennessee (Knoxville, TN), University of Kentucky (Lexington, KY), West Virginia University (Morgantown, WV), Marshall University (Huntington, WV), University of Louisville (Louisville, KY), and Ohio University (Athens, OH).



This material is based upon the work supported by the National Science Foundation Under Grant No. 0119679. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.



# **A Companion to the Film, *Putting Mathematics Education in its Place***

Michael Corbett, School of Education  
Acadia University

April 26, 2011

## **Introduction**

By now there is a considerable body of literature that attempts to understand the teaching of mathematics as a social practice (e.g., Walkerdine, 1988; Baker, Street, & Tomlin, 2003). This work parallels work in literacy education that also attempts to situate literacy not as a set of decontextualized abstract skills, but rather as a set of social practices that are situated in context. Indeed in recent educational scholarship more generally there has been an increasing recognition that past practices of abstraction and decontextualization have caused challenges for teaching and learning. At the same time, critiques of naturalistic understandings of literacy and numeracy learning have challenged and exposed the limitations of contextualized understandings of learning.

In the Canadian context there has been very little written about how rurality plays into the conundrum I identify above. In other words, if we begin from the idea that place matters in math education, what difference does it make if that place is rural? This, of course raises all sorts of difficult if not intractable questions about what counts as rural. For the moment, I will bracket these important questions and proceed from the assumption that there is a way to differentiate between rural and urban places, both from a demographic perspective (i.e. population density and distance from metropolitan

centres), as well as from a sociocultural perspective that relies on the way that people perceive and experience life in those places they believe to be rural. Setting these questions aside, this paper will offer some preliminary considerations around questions of mathematics education and rural schooling.

I must start off by saying that I am not a mathematics educator. For seven years from the mid 1990s until 2002 I did teach mathematics, among other things, in a small rural elementary school in Atlantic Canada. There I taught a split grade 5-6 class in the context of curriculum changes that were attempting to implement the NCTM standards. Like a lot of elementary math teachers, I was educated in the arts, humanities, and social sciences and found the shift away from a rather simplistic focus on “basic operations” and simple geometry toward a more complex engagement with multiple strands of mathematical thinking to be a challenge. What the experience did do for me and for some of my colleagues was to articulate math instruction with parallel shifts in language arts curriculum away from teaching literacy as a decontextualized, abstract set of skills to a program focused on language in use. In my school, part of this shift was an attempt to bring community life into conversation with life in school in a project we called “community into curriculum.”

Community into curriculum was an attempt to use resources, images, stories, problems and life in the community as a foundation for curriculum. We developed a series of projects that ranged from music and theatre, through building and nature study projects like a greenspace, school garden and greenhouse constructed by parents, students and teachers, to entrepreneurial work growing and selling bedding plants from our greenhouse, to an extensive investigation of water quality in the community, to art and

movement work. While we did not have the language at the time, this work was what today might be called place-based or place-sensitive education (Theobald, 1997; Smith, 2002; Gruenewald, 2003; Greenwood and Smith, 2007).

While the mathematics curriculum was opening up to include the kind of project-based work we were undertaking, I still retained a focus on the explicit teaching of a discrete subject called math. Language arts was treated in the same way. There were designated times in the school day for each of these subjects, taught largely out of context and apart from the investigations that formed the basis of “community into curriculum.” Looking back, it is clear to me now that while *Community into Curriculum* was a project that looked at the connection between rurality and curriculum, the two subject areas in the curriculum that escaped integration were mathematics and language arts, the highest status elementary school subjects. At the same time, though, language and mathematics were clearly integrated into the various projects we undertook even though there was seldom an explicit recognition that this is what was happening.

The special status of math and language arts is reflected in contemporary concerns with literacy and numeracy—and the way that curriculum for *disadvantaged and underachieving children and youth* has been condensed into focused didactic and remedial pedagogies designed to “recover” the child from a “risky,” ill-educated fate. These highly focused remedial, basic-skills pedagogies are spatialized as well. In other words they are rolled out to those communities that are defined as educational problem areas, typically in inner cities and in isolated rural places. It has become common to identify the rural with poverty and disadvantage and thus with intensive pedagogical interventions: “urban education” and “rural education” as enterprises to counter

deficiency.

In much contemporary educational discourse, then, math and literacy are invoked as solutions to problems of poverty and social isolation. This new discourse in rural contexts fits in with established historical discourses which have been focused on education as a solution to what Elwood Cubberley famously called the “rural problem,” whose educational variant he dubbed the “rural school problem.” I have argued that one core feature of rural education has been its close connection with the mobilization of populations out of rural areas. So, in fact, education in rural areas has had a longstanding ambivalent relationship with rural communities. I believe this is particularly the case with math and language arts, the core skill sets viewed as especially necessary to support mobility across time and space.

A challenge for contemporary rural educators (especially teachers), then, is how to imagine rural education in a way that is not entirely focused on defining the rural as a problems space or as something simultaneously left behind by history and outmigration. Problems of community economic development come into the picture when we attempt to imagine rural schools that support and contribute to their communities rather than mostly serving as way-stations for outward bound youth. These are the kinds of questions raised by the ACCLAIM project, organized by the University of Tennessee Knoxville, Ohio University, West Virginia University, the University of Louisville, and the University of Kentucky. ACCLAIM is doing ground-breaking work in the United States simply by asking a number of key questions about the relationship between math education and rurality that concern what difference place might make in math education.

Because this is a relatively new area and one which has not been researched in the

Canadian context I decided to take up an invitation from Craig Howley of ACCLAIM by raising a series of questions with math educators in rural Nova Scotia addressing five key questions (the final three of which are central to the ACCLAIM mission):

1. What difference does place make in mathematics and what difference does it make in mathematics education?
2. Mathematics has been presented as a decontextualized, metalanguage that sits outside politics, culture and place. It is also constructed as a representation of pure intelligence because it is not linguistically anchored. Finally, because it is lifted out of context, math is often used as a sorting and selection mechanism both in school and for occupational and academic placements outside school. What has been the impact on this way of seeing and using mathematics on contextualized teaching.
3. What kinds of mathematical knowledge sustains place?
4. What sorts of mathematical knowledge accommodates place well?
5. What kinds of mathematical preparation suits a rural world of greater scarcity?

I am in no position to answer these questions alone. They are new questions on the landscape of Canadian educational scholarship to my knowledge.

I have however, been working with mathematics educators who are using the work of Pierre Bourdieu and Basil Bernstein to understand how some children come to be identified as “good at math.” This research interrogates classroom discourse and the assignation of intelligence to particular children and not to others. My math education colleague have also been working for some years in a pre-service teacher education program that prepares teachers, many of whom go to work in rural contexts in western

Nova Scotia. In the film *Putting Mathematics in its place: In conversation with David Reid and Christine Knipping*<sup>1</sup>, developed for ACCLAIM, we take up the questions above. The film, obviously, speaks for itself, but through the rest of this paper I will take up a baker's dozen of issues that seem to me to arise from the conversation.

### **Issue #1: Math and Place**

Is it the case that lingering notions of math as a placeless, context-free, apolitical meta-language gets in the way of place-sensitive math education? This is the first question we raise in the film.

Both Christine and David agree that this *is* the case, but both want to raise several sub-issues around this ubiquitous notion. First of all, in mathematics there seems to be a particular tension between the concrete or situational and the abstract or generic. This tension is not unique to math, but because quantification is so much a part of the way the subject is taught, does such “quantification” get in the way of the contextualization of teaching? Both David and Christine seem to suggest that it does.

Christine opens with an analysis of the internationalization of math education and an emerging global pressure from the OECD and other international assessment organs, which pressure in turn influences ideas of what counts as appropriate mathematics education. The context, then, of the educational enterprise is increasingly seen as being global. So logically, questions of place, at least those which are concrete and located in a deep way in particular locales, are pushed well aside in favor of ways of thinking about math that are comparable across context.

But place is not the only thing. Place needs to be understood in terms of national

---

<sup>1</sup> Posted as streaming video at <http://vimeo.com/20372996>.



education systems and national traditions regarding curriculum and assessment. When I raised the idea that Bourdieu saw math as a pure, context-free representation of intelligence (Bourdieu, 1994), Christine was quick to point out that Bourdieu was a student of the French national education system. In that system, math is used as a sorting and selection mechanism in a way that is not seen in other European contexts (Germany, for instance). Still, I wanted to push the issue with Christine using the illustration of math and sciences streaming in schools in rural Canada.

## **Issue #2: Conversational Spaces**

One of the key problems that Christine especially speaks to is that of dichotomizing and romanticizing place and vernacular practices *vis a vis* academic practices (or *vice versa*). She speaks to the importance of a number of conversations including the one she thinks needs to happen between “vernacular” and academic math. This is easy to say but much more difficult to do because there are real tensions in play here.

The first tension we addressed is the tension between hands-on rural know-how and theoretical academic knowledge. I opened this line of questioning by raising the issue of the way that rural people are often more comfortable with physical work and with those abstractions that are located in local lifeways. This perspective opposes popular stereotypes about mathematics being a purely abstract, decontextualized space outside language, culture, politics, and place. It is interesting to me that once again there is a parallel here with language teaching, which has also been presented in such a way in schools that its abstract, structural features have been the focus of curriculum.

A second tension related to different social and economic groups within rural

communities. First of all, there is the problem of imagining rural communities as monolithic social and cultural entities where everyone is in basically the same (often economically marginal or modest) economic condition. That is, to the contrary of this widespread misperception, internally within rural communities there *are* differences of power and influence among citizens (i.e., even if the differences encompass a smaller range than, say, in metropolitan Toronto or Los Angeles). David, in particular, argues that this reality—so typically unremarked by outsiders—may mean that differently placed individuals require, or desire, different mathematical knowledge. Christine goes on to point out, though, that education needs to be about opening up conversational spaces that bring together people in different social locations. (Here I think she implicitly addresses the importance of the inclusive public schools.) Finally, Christine speaks to the importance of establishing intergenerational conversations about the ways in which mathematics has been used historically and in contemporary social practices in everyday life. She sees that much embedded mathematical knowledge may *not* be passed along from generation-to-generation through traditional channels of family-based knowledge transmission (i.e. from parent to child or from grandparent to grandchild). Again, this is a question of opening up conversational spaces for sharing mathematical knowledge and defining mathematical problems.

Thirdly there is the question of power differentials and different social visions between rural citizens and centralized urban power. These differentials are typically seen in the form of state or corporate control of established social and economic practices. More specifically the central questions here have to do with the way that that government regulation and control tend to support the interests of corporate capital centralization

rather than distributed small-scale productive activity.

David argues for using mathematics to support development choices that make sense for particular rural places in the context of global, national, and state economic strategies and regulatory regimes. Christine goes further and claims that mathematics teachers need to decide whose side they are on and recognize their work as being *politically located*. She invoked the idea of math as a situated social practice that *can* be brought in synch with the social struggle. She uses the example of Knicknick who works in mathematics education amongst landless peasants in Brazil and whose practice is aligned in the service of the political, social and economic struggles of her students and their families.

### **Issue #3: Politics of Space and Place**

Both David and Christine suggest that it is impossible to think about place without thinking politically. *Place* concerns both a physical location as well as social relations within that particular physical location. David's response to the question of what mathematical practices sustain rural place nuances things and suggests that rural places are not uniform social spaces nor are they spaces that are so distinct from the varied urban places and those who live within them.

This insight raises the possibility that the mathematical practices that sustain rural places or that accommodate place well may indeed be more related to *social relations within communities* rather than to differences between geographic designations like "rural" and "urban." At the same time, Christine also wonders whether or not categories of social division such as social class, gender, and place might not be more significant than the intra- and international distinctions so highlighted by testing regimes like the

PISA and TIMSS.

#### **Issue #4: The Global Shift**

Curriculum, pedagogy, and educational policy have been influenced mightily by globalization and internationalization. Christine speaks of the influence of the PISA and TIMSS and the way that they have changed the focus of math education. David also responds around questions of standardized testing and curriculum. My line of questioning queries whether or not such moves take the local out of math education and support the idea of math as a pure placeless abstraction.

David uses the term “distraction” to describe the way that a focus on standardized testing has caused teachers to attend to kinds of mathematical preparation that may make it more difficult to teach mathematics from the perspective of place. The global, I argue, is a kind of imaginary community (Anderson, 1983) or even a placeless space (Myerowitz, 1984) in which abstractions are the only way of translating knowledge through time and geography. Christine appears to see such moves in terms of a de-politicization of mathematics education that has occurred through time as teachers themselves have become less interested in engaging in political struggles. She locates the 1970s as a time of particular political activism for teachers. It is interesting, I think, that the development of international testing begins in the 1980s.

#### **Issue #5: Comparing Divided Societies**

Internationalization of math education and education generally sets up a league table of nations within a global education system. The critique of international testing that argues for the inappropriateness of comparing different societies with different cultures, education traditions, different curricula, and different forms and levels of

economic development is well known, but Christine also suggests that the social divisions *within* societies (e.g., class, gender, race) are more important than the social divisions *between* societies. If this is indeed so, is it a powerful argument for attention to place? Both of these critiques of international testing speak to the way that the scope and scale of assessment practices can deflect attention away for the sites in which education is actually provided.

In the end this is a debate between forms of convergence and divergence hypotheses. These visions of the nature of education within the context of globalization are nicely framed by Joel Spring (2009). Spring differentiates between a vision of education that draws from a convergence hypothesis and is understood today in terms of human capital theory. The argument is that globalization draws increasing numbers of people into a single world economy and a singular world culture. On the other side of the question, quite different educational perspectives understand globalization as a force of cultural *differentiation*. Here, globalization draws attention to cultural difference and the politics of difference. As Ulrich Beck pointed out some time ago, both of these processes function simultaneously in contemporary societies as life becomes both increasingly standardized and but also increasingly individualized.

The conversation contained significant elements of this tension between the global and the local and the multiple differences that are drawn into play with one another in contemporary societies. Once again, the theme of conversation was employed to address the possibility of communication across difference.

#### **Issue #6: Math as a Tool of Social Control**

One face of math as a neutral, abstract meta-language is that this neutral face

allows it to be constructed as a *neutral* sorting and selection tool. This insight tends to support the way that language (Bourdieu and Bernstein) operates more broadly in educational systems. The difference with math, however, is that it can be more easily constructed as a “pure intelligence” for which there is a long history of quantitative measurement. This makes it particularly prone to being constructed as a neutral social sorting tool. This alleged neutrality, quantifiability, and placelessness gives math its privileged position in the hierarchy of curriculum and curricular purposes.

At the same time this privileged position and history of mathematics as an instrument of social control has contributed to its negative reputation amongst students and parents alike. This resistance is particularly the case, it seems, in communities of historic disadvantage where an established mismatch between the life world and political struggles of ordinary people and the academic space of mathematics and math education is considered to be very wide.

### **Issue#7: Selection and the Reputation of Math**

Mathematics reputation rests in some part on the way that it is used as a mechanism of social control and sorting and selection. Does this selection function have a particular rural face that we need to understand better? In the conversation I debated a bit with Christine about the extent and form of mathematics as a selection tool here in rural Nova Scotia.

We both seem to agree that it is a selection tool here, but we each take a different approach to the problem. As a sociologist, I am more interested in the way that mathematics as a discourse comes to be constructed as a set of principles and concepts that tend to be disembedded from context. I argue that it is this disembedding that allows

math to be constructed as a pure intelligence that transcends the social, the cultural, and the political. Mathematics is also situated in this discourse as the great equalizer because it is not linguistically based like other academic subjects. Because it is abstract and disembodied it can be used as a tool of selection across contexts and constructed as an appropriate measure of raw brain-power.

Christine's core research question concerns how some students are selected as being "good at math" or as having what she calls a "math mind." In other words, she is interested in how it is that some young people are considered to have this raw brain-power that allows them to be able to excel at mathematics. She and David both demonstrate how this construction of mathematical ability as an innate disposition also plays into the traditional sorting and selection function of mathematics in schools and in postsecondary institutions. By challenging the innateness hypothesis and by trying to understand the social mechanisms that are in play in selecting those considered able, Christine challenges the deeper educational myth that people end up where they do in society because of their raw ability and not because of their social position or cultural resources.

How is the rural student who is considered to be "good at math" *positioned* in a rural school and its community? This question proceeds, I think, from this conversation.

### **Issue #8: Learning to Leave**

Is a facility in math considered to be a gold-plated ticket out of the community? What good is what Christine calls a "math mind" if you are going to stay? David raises the same question, wondering about how mathematics education might be understood in such a way that it might not be constructed as a subject given in a serious way only to

those elite students who are leaving a rural area. Given its established status as a pure measure of intelligence and as a social sorting and selection tool, the function mathematics tends to serve in rural communities is intimately associated with selecting those students who are considered to be able to leave the community.

Academic credentials, in general, are a sort of guarantee that one set of educated gatekeepers pass on to other gatekeepers. The credential then becomes a reference sent from, in this case a rural teacher or professor, to others inside the education club that this individual is capable of understanding the world from a distant, abstract perspective and not just from a localized and concrete one.

As such, mathematical credentials are foremost among these markers of adaptability and intellect, whether they are considered to be innate or acquired. David argues though that it is possible to connect mathematics education with place and to begin not with the abstractions that certify who may and who may not leave, but rather, with the local cultural and social practices carried on in a place. By beginning here, mathematics is not fundamentally about placelessness, abstraction, sorting, and selection of the potentially mobile, but rather it can be placed in the service of people learning to live where they are now.

### **Issue #9: The Coupled Myth: Innateness and Freedom from Context**

In addition to the problems associated with decontextualization, both Christine and David raise the issue of the myth of innateness in mathematical intelligence. This is one important way that math is lifted out of place. It is conceptualized as something dispositional that one is either born with or not. They seem to argue that problematizing this myth is one way to re-place math and math education. Indeed, innateness and



decontextualization are according to David, tightly coupled. The former (i.e., being born with or without mathematical capacity) provides a *psychological* disembedding of mathematical knowledge, while the latter (decontextualization) is a *sociological* disembedding. So on the one hand, it is only some people who are deemed to possess *mathematical capacity*, while on the other hand *mathematics itself* is a specialized space outside language and social situations. In order to really “get” mathematics, the learner must escape place and move to a space of abstraction. Both these myths need to be rejected and challenged, David and Christine argue. By rejecting the myth of innateness we can, Christine suggests, take it into places on the social margins that have been denied access to mathematical knowledge (e.g. the heroic ghetto teacher). It seems as though she sees this rejection as one of the most important moves a teacher can make.

What happens to math education if both of these outlooks are rejected? We move to considerations of math and math education in which place matters first of all. Everyone, after all, has mathematical practices. These practices have a history and are necessarily located somewhere. There is then no avoiding context. In fact it is only by employing the myth of innateness that it becomes possible to justify the lifting of mathematics education out of place. In other words, if math is located in place and vernacular mathematical practices become a part (if not the most important part) of math curriculum, then everyone can and does do mathematics. This insight once again raises the possibility and even the *necessity* of a deep conversation between vernacular place-based knowledge forms and abstract academic knowledge forms which can serve as short-cuts, alternative perspectives, or enhancements to local ways of knowing.

### **Issue #11: Math as a Tool for Social Justice**

Since it is often constructed as context-free and politically neutral, mathematics can also be constructed as a tool of liberation. This position, David and Christine seem to argue, is where place can come into play in math education in an important way. By connecting math education with the social struggles of ordinary people and by ‘starting with’ their issues and ‘staying with’ them through their struggles, math educators can work in solidarity with rural people. This, Christine argues, was a common position of math educators in France in the 1970s. She identifies this desire for social change as the kind of “spark” rural math educators need.

This argument raises a whole host of interesting possibilities and brings into play the possibility that rather than being a sorting and selecting process that would pick out elite “math minds” for outmigration and urban labour markets, it might be possible to teach math in a way that promotes social justice. Obviously, mathematics is a powerful set of tools for oppressed people as Christine illustrates. Just as Freire (1970) imagined literacy as a tool of empowerment and resistance, so too might mathematics be imagined in a similar way. Christine focuses on the work of Brazilian rural educator Gelsa Knijnik (1997), but the message could be applied anywhere. She encourages math educators to take sides in much the same way that Freire encouraged literacy educators to do the same thing.

The same tools that have been used historically to cow and marginalize oppressed populations could, as David says, be taken up by the oppressed themselves to analyze their conditions and improve their lives. This vision challenges the idea that mathematics education can and should sit outside politics. It is perhaps the most radical suggestion in

the conversation, one which flies in the face of the international league tables, the so-called educational accountability, movement and the turn away from place-based to standards based pedagogies, curriculum and social policy. At the same time, this kind of political turn in mathematics education could threaten its privileged position at the top of Ivor Goodson's hierarchy of curriculum, a place secured by its abstraction and distance from concrete lived problems.

### **Issue #12: Sustaining Rural Places**

David questions the hegemony of a single idea of “rural” as well as the unity of particular rural places. Which rural places (they differ, after all)? Do all people in the same place have the same needs and interests?

Christine wonders about bringing people in different social positions into conversation. She uses this conversational metaphor at a number of levels: (a) between educators and rural people, (b) between teachers and students, (c) between people in different social positions in a given community, and (de) between adults and youth. Conversations are key to sustainability, she suggests.

David also argues that if we follow the activist model he and Christine promote, math education starts in a different place than where the PISA and the standardized forms of curriculum and assessment require. The start (and finish) for math education are both the problems and struggles of ordinary people rather than what he calls “a box of mathematics,” or, in other words, what I suggest is a globalized human capital agenda. Is it possible to challenge the “starting place” in the current political climate? What would it mean for the status of school mathematics education to become directly connected to the struggles of relatively powerless and marginal rural people?

There are a number of ways to look at the idea of sustainability. Some versions might indeed include the sustenance of existing configurations of social and economic power. Or on the other hand, sustainability might mean supporting rural people against the relentless agenda of consolidation and concentration that tends to serve the interests of urban-based power.

But it is not so simple. As David has suggested earlier, rural places are neither egalitarian in their internal social structures nor are they monolithic in their character. There is a lot of diversity between and within the places we call rural. So David makes two interesting claims. The first is that not all rural communities are the same and not all of them can employ the same development strategy. Not all can he argues, opt for eco-tourism for instance. How a rural place might develop ought to depend on the will and interests of its citizens. So coming to agreement on this kind of development question should be a matter of democratic decision-making. Depending on what strategy a community adopts, there will be different forms of mathematical knowledge that might be relevant.

Secondly, he goes on to say that not all individuals and sub-groups within communities have the same interests. Indeed, the very idea of community invokes a number of things including nostalgia and mourning for a world that is not about to return (Kelly, 2009). For Bauman (2000), the idea of community evokes nationalist propaganda and a discursive construction that marks the impossibility of the very space it conjures. Community is gone, to paraphrase Bauman, as soon as the word is uttered: and those who actually live in a community never need to speak the word. It might be nice to imagine that development strategy and social-economic planning might be decided democratically

or even by consensus in a small face-to-face rural community, but the reality is that all communities have histories of more and less democratic political practice. In many or most rural communities, there are deep divisions and huge inequities in terms of the power different players hold in decision-making processes. The influx of newcomers seeking temporary or even permanent refuge from their urban lives adds to this complexity.

How mathematics education might challenge existing structures of inequality and support forms of sustainability that are more democratic than has been the case historically is a very important question for rural development, for education in general, and for certainly for mathematics education in particular. As an established mechanism for social selection and maintenance of the status quo, is it even possible to think of mathematics education as a force for equity and social justice in rural North America? This is a good question.

### **Issue#13: Historical Practices**

Problems of time and tradition are also raised in the conversation. The history of social oppression in rural communities is one face of the importance of history in mathematics education. But there are other questions, for instance, around the loss of vernacular mathematical practices, or ways of doing mathematics on everyday life that have tended to stay outside the frame of schooled mathematics. What role do these practices play in math education today and what role should they play?

As Kelly demonstrates, there exists in many rural communities a recurring and continuing sense of loss, the loss of people through outmigration and the loss of knowledge through the marginalization of vernacular practices by a number of forces

including institutionalized education. What do we do to stimulate interest in existing math practices in communities that are rapidly being lost? Do we need an anthropology or even an archeology of mathematics in rural communities to recover and support lost knowledge? Would such study be useful for bridging the gap between math education and place?

Each of these questions seems to invite a variety of research, curriculum and pedagogical possibilities that inquire into historical mathematical practices. But, as Christine points out, if math education is left in the world of the vernacular, glorifying the clever ways that people got things done in the past, the mathematical conversation is truncated. She draws again on Bernstein to illustrate the importance of bringing educational practice out of its particularistic context into a broader conversation with other practices and other places. Her focus on the importance of conversation then extends back and forth across time and invites a dialogue between traditional measurement practices on a farm, for instance, and standardized academic ways of measuring. But it also, once again implies a conversation across places and spaces, one in which the abstract can become a way of stimulating understanding rather than alienating and marginalizing those whose lives are more powerfully built and structured into place.

These conversations across place and time open up what I think of as a rich starting place for what amounts to further development conversations that might engage math educators with students and parents. These conversations about the future are the place of dreams about what sustainability might mean to particular communities, about what things are lost and are ready to be put in the ground, and about how

groups of people might democratically dream their way forward together into the future supported by what we might call “embedded” math educators.

#### **Issue #14: Intellectuals**

Gramsci (1971) wrote about what he called the organic intellectual. This is the intellectual or cultural worker who is “of the people” and who bridges the local and broader contexts to promote a greater measure of justice and equity in a community. Christine gives a number of examples of math educators who have worked as organic intellectuals in their communities in solidarity with the oppressed. This for David and Christine appears to be a hopeful vision of a form of math teaching that might begin to escape the placelessness and abstraction of the history of the discipline. To achieve this vision, though, requires a significant shift in how math educators both see themselves and how the institutions in which they work function.

In rural communities, intellectuals and intellectual work are often met with suspicion. Mathematics in its role in sorting and social selection is both respected and dismissed as inaccessible (“too hard” and “beyond me”). This particular gap between typical mathematics educators and how many “ordinary” rural citizens live and work is exacerbated by a politics of anti-intellectualism which draws much of its key imagery from the distinction between straight-shooting, pragmatic, socially conservative, ordinary people on the one hand, and sophisticated, bullshitting, socially liberal, relativistic, “soft” intellectuals on the other. This mythical gap and its perpetuation are assuming increasing importance in North American political culture, it seems.

The question is this: How can intellectuals who have been key gate-keepers making key social judgments now position themselves for conversation with the very

people over whom they have stood in judgment? It almost appears to require a kind of truth and reconciliation commission to even imagine. Christine suggests that it is simply a matter of bridging people who have been separated into conversation with one another. Both Christine and David recognize the difficulty involved in stimulating this conversation.

This to me is the most intractable obstacle standing in the way of achieving the vision of a place-sensitive mathematics education that operates in solidarity with rural people. Perhaps Christine is correct and the context-bridging conversation is the place to start. I question, though, whether or not the more important conversation is the policy conversation about the standards movement and how it makes any form of politically engaged or place-sensitive education virtually impossible. I believe we must start from a realization that we work in the context of a standards-driven education system whose standards are derived from assessment bodies designed to produce a labour force for global capitalism. In this system and its assessment mechanisms, mathematics is increasingly drawn to center stage as both a key social sorting mechanism and as the foundation for the emerging technocracy.

### **Conclusion: Binaries and Solidarity**

The conversation featured in *Putting Mathematics Education in its Place* demonstrates to me as a non-specialist how the disciplinary space of mathematics and mathematics education are firmly embedded in place. Mathematics is no neutral tool, but like every other form of allegedly “academic” knowledge it arises from human problems, or more specifically, from the problems faced by those with the resources to mobilize the apparatus of formal mathematics to address them. At the same time vernacular



mathematical practices do operate, usually beneath the radar of the set of academic social practices that come to be constructed as school mathematics.

This insight, of course sets up a binary opposition that we take up in the film, suggesting that the most important mathematical spaces are found in between formal academic mathematics in the textbooks and the vernacular every-day practices in which people use practical mathematics in their daily lives. Alas, the binary itself is problematic and when we institute it we run the risk of *perpetuating* the distinctions between the “academic” and the everyday or the practical. Yet, at the same time, the commonplace distinction between what mathematicians do and what ordinary folks do when they solve problems is precisely the chasm that contemporary mathematics educators seem to need and want to bridge. In rural communities this chasm is laden with a lot of history and a lot of baggage. Schooling itself is quite often seen as an urban imposition and a set of practices which are far removed from the daily lives and needs, and indeed, from the political, social, and economic struggles of everyday people in rural communities.

### References

- Anderson, B. (1991). *Imagined communities: Reflections on the origin and spread of nationalism*. London: Verso.
- Baker , D., Street, B & Tomlin, A. (2003). Mathematics as social: Understanding relationships between home and school numeracy practices, *For the Learning of Mathematics*, 23, 3.
- Bauman, Z. (2001). *Community: Seeking safety in an insecure world*. London: Polity.

- Bourdieu, P. (1994). *Sociology in question*. Los Angeles: Sage
- Freire, P. (1970). *The pedagogy of the oppressed*. New York: Continuum.
- Gramsci, A. (1971). *Selections from the Prison Notebooks*. London: Lawrence and Wishart.
- Gruenewald, D. (2003). The best of both worlds: A critical pedagogy of place, *Educational Researcher*, 32(4), 3-12.
- Gruenewald, D & Smith, G. (Eds.). (2007). *Place-based education in the global age: Local diversity*. New York and London: Lawrence and Erlbaum.
- Kelly, U. (2009). *Migration and education in a multicultural world: Culture, loss and identity*. New York: Palgrave.
- Knijnik, G. (1997). Politics of knowledge, mathematics education and the peasants' struggle for land. *Educational Action Research Journal*, 5(3), 1-8. Retrieved from [www.mes5.learning.aau.dk/Papers/Knijnik.pdf](http://www.mes5.learning.aau.dk/Papers/Knijnik.pdf)
- Meyerowitz, J. (1984). *No sense of place: The impact of electronic media on social behavior*. London : Oxford University Press
- Smith, G. (2002). Place-based education: Learning to be where we are. *Phi Delta Kappan*, 83(8), 584~594.
- Theobald, P. (1997). *Teaching the commons: Place, pride and the renewal of community*. Boulder Co: Westview Press.
- Walkerdine, V., (1988). *The mastery of reason*. London: Routledge.